

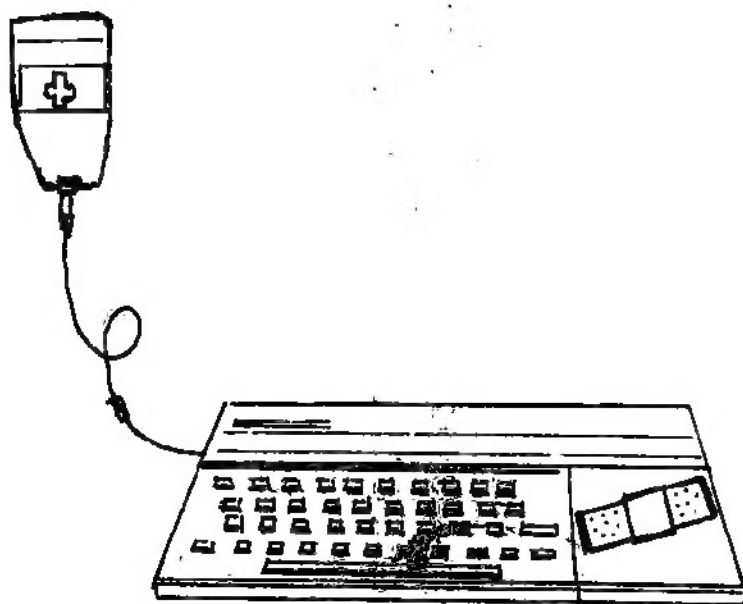
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Time Designs^{T.M.}

MAGAZINE



THE COMPUTER THAT WAS
JUST too good to die !!!

INSIDE: NEWS AND VIEWS, WORKSHOPS AND PROGRAMS

Time DesignsTM

MAGAZINE

NOV. — DEC.

1984

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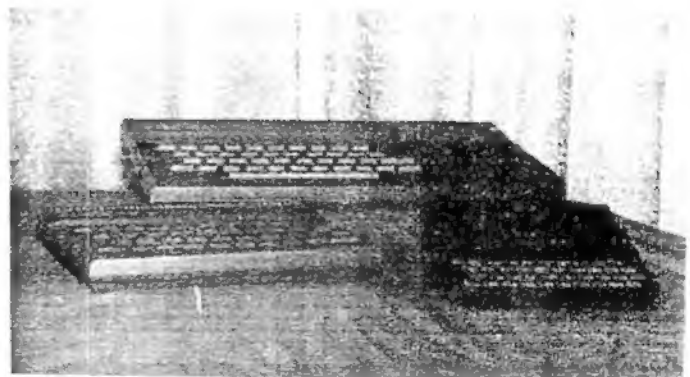
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The TS computer family.
Read "The Rise and Fall"
starting on page 6

EDITORIAL

TIMEX/SINCLAIR LIVES!!!

Welcome to the premier issue of Time Designs Magazine. It has been over six months now since the departure of Timex Corporation from the home computer market, and several good things have come out of the ordeal. First of all, there is a real feeling of unity among the TS users and user groups. They have banded together and are distributing information, and are supporting one another. Second, Sinclair Research is still with us, and their computer line is still going strong. As a result of this, we in the U.S.A. may benefit directly from software and add-ons, that may soon become compatible and available for our own TS computers. Sinclair has also just introduced their new "Quantum Leap" computer, and will be one piece of equipment to watch. Also many of our friends are still around such as Thomas B. Woods of the ZX Pro/File fame. Companies like Byte Back Co. and Softsync, Inc. are still going strong.

So the good news is Timex/Sinclair Computers still live! This magazine is dedicated to that ideal. As our policy says, we are devoted to the TS 2068 and other Timex and Sinclair computers. We do however, have a heavy emphasis on the 2068. This is because in a way it was short changed as far as published information goes, and it was primarily in it's infancy, when Timex decided to abandon it. But we won't forget the old stand bys either; the ZX81, the TS 1000 and 1500. We will feature them also, from time to time.

Our goal here at Time Designs is two-fold. First, we want to keep the interest of the newer Timex/Sinclair user, by providing interesting and informative articles that teach, but won't confuse. For them we will contain a good deal of

features on BASIC. Then on the other hand, we want to offer our long-time users a useful magazine with special features such as equipment reviews, construction projects, and articles ranging in subjects from machine code to mass storage devices.

We have a lot of neat plans for our future issues and we hope that you will take advantage of our subscription offer in the back of our magazine. I would also like to point out the software and article offer that is in our Shopping Mart section. This is a great opportunity for any potential authors who would like to have their features published in our magazine.

If there is ever any questions, comments, or helpful suggestion that you would like to make about our magazine, please feel free to drop me a line. We would appreciate any response from our readers. In our second issue we will have a feature called "The Mail Box" where we will publish selected correspondence from our readers.

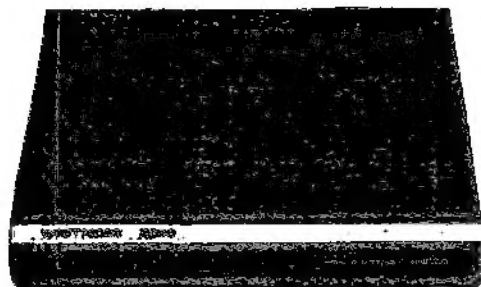
We here at Time Designs Magazine are excited to serve you in this capacity and look forward to a long and friendly relationship. We are proud of our magazine and we hope that you are pleased also. And remember.....Timex/Sinclair lives!

Tim Woods

Tim Woods
Editor/Publisher

p.s. We would like to compile a complete directory of any Timex/Sinclair user groups in the U.S. and Canada. If you have such a group or know of one, please send the name and correct address of the group to Time Designs Magazine.

BITS AND PIECES



2050 MODEM IS HERE

The Westridge TS 2050 Telecommunications Modem is at last really here. It is exactly the same modem that Timex promised and took orders for, but never came through on. It is manufactured and sold by Westridge communications, a division of Anchor Automation in Marina Del Ray, California. Westridge has set up several authorized dealers around the U.S. to merchandise the modems. For the purchase price of \$120 you get the modem, ribbon connector with a piggy-back connector, power supply, 28 page manual, and cassette software for either the TS 1000/1500, or 2068 computers. The unit is quite small and matches the 2068 in color. It is a direct connect modem, and comes with an extra long telephone connect cord. The TS 2050 is fairly easy to use and has some rather nice features like auto-dial from the keyboard, and user friendly menu driven software. You can also set the modem up to auto-answer calls from other users who want to leave messages on your monitor screen. Westridge also plans to release some other software in the future, which would allow up-loading and down-loading of programs and text, and also memory storage/recall of frequently dialed phone numbers. In some of the TS 2050 units being currently shipped, there is a limited offer for a free membership in the data base "The Source". If you would like to get the phone number of a local dealer in your area who carries the Westridge TS 2050 Modem, call (213) 306-4103 or write to Westridge Communications, Inc., Marina Del Ray, Ca., 90292.

GOOD NEWS (FOR TS 2068 OWNERS)

It appears that the software famine for TS 2068 computer owners may soon be over. A device called the Spectrum Emulator has been introduced here in the U.S. It will allow software produced for the English Sinclair Spectrum to run on the 2068. The heart of the Emulator is the Spectrum ROM chip. Hobbyists for some time now have been opening up their computers and internally replacing the 2068 ROM chip with the Spectrum chip. This however could be quite risky for the novice, and would most certainly void any warranties. The Spectrum Emulator however, is reported to be a plug-in configuration, using the Timex Command Cart-ridge port instead.

The Emulator idea is not necessarily a new one. Timex had developed a device for production called the "Chameleon" which was capable of making the Spectrum software translation.

Timex users will be able to choose from the vast library of software titles available for the Spectrum. This will most certainly bring the English software suppliers here to the United States. One company, Quicksilver has decided to release several new titles with the advent of the Spectrum Emulator.

As we went to press, it was reported that there are two suppliers here in the U.S. that carry two different models of the Spectrum Emulator for the TS 2068. It was also reported that several outlets are stocking a variety of Spectrum software titles. We will be reporting further information on the subject in our next issue.





IT REALLY IS A "QUANTUM LEAP"!!!

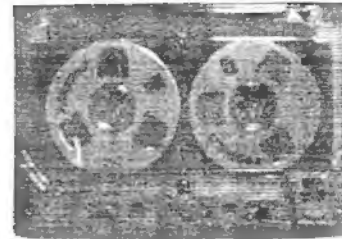
Sinclair Research has done it again! Their new personal computer with 128k RAM, two micro-drives, and four software packages, sells for the almost unheard of price of \$499. It will be available here in the U.S. sometime this fall, and will be sold by mail and at a few retail outlets. The QL has a real full size type-writer keyboard, five function keys, and four separate cursor keys. It also features 85 characters/line on the screen, RGB monitor output with high resolution graphics, two R232c ports, and six additional micro-drive units may be connected to the expansion port. Unlike many personal computers, the QL is based on the Motorola 68008 32-bit microprocessor with an eight bit data bus. Traditional Sinclair engineering provides for a sophisticated design with a reduced number of internal parts. The micro-drive cassette packages include a word processor, a spreadsheet, a data base/file manager, and a graphics design program. When compared feature to feature with anything else in the same category, the Sinclair QL has everything beat, with over twice the power, and a host of features. This really is one computer to be reckoned with.

NOTE: We here at Time Designs are excited about the release of the new Sinclair QL. We will be covering it in our pages on a more or less frequent basis. Look for future articles on business applications and in depth programming. We want to welcome the QL to the family of quality and affordable Sinclair designed personal computers.

FACTORY SERVICE STILL AVAILABLE

"Factory service will continue more or less indefinitely...at this time, there are no immediate plans to discontinue this service," reported a Timex spokesperson.

Timex has promised to honor all warranties and service contracts at the companies service center in Little Rock, Arkansas. Repairs of computers not under warranty will also be handled at the center for a nominal fee. A full compliment of parts and electronics are kept in inventory by Timex. If you need information on repairs, warranty matters, or just technical advice, contact Timex by writing to 7000 Murray St., P.O. Box 2858, Little Rock, Ark., 72203, or by calling (501) 372-1111.



FROM OUTER SPACE???

Is it a power pack from one of the George Lucas space fantasies, or is it a miniature magnetic tape drive from an IBM main frame? No to both. It is a new data cassette from Recoton Corporation. The first thing you will notice is the clear plastic housing which allows complete inspection and viewing of the tape reels. Recoton Data Cassettes are precision manufactured with a premium high density magnetic tape in a durable close tolerance plastic shell. Adhesive labels are packed with each data cassette for cataloging and marking each program. The Recoton Cassettes can be found in the electronics section of most variety stores, and are available in two formats. Ten and Twenty minute lengths. They come two in a pack and a C-10 data cassette pack lists for around \$4.87. Recoton Corp. is based in Long Island City, New York, and manufactures a line of computer accessories along with their premium data cassettes.

2068 TECHNICAL MANUAL RELEASED

At last! Here is the one that has been promised for some time now. The 2068 Technical Manual isn't fancy, but it is big. Over 280 pages! It is crammed with detailed information on the in and outs of the 2068 logic circuitry, and also the enhanced display modes. This was the information that Timex was to release to the third party companies for software and hardware development. It is also the manual mentioned briefly in the 2068 User Guide entitled "Advanced Programming Concepts Manual". Among the many features is a simple circuit that hobbyists can build, to connect a RGB monitor to their computer. There is also drawings and comprehensive information on the "insides" of the now defunct Timex Command Cartridge, showing the PC board, connector diagram, and all the associated components. Perhaps someone will start developing the cartridges as a result of the availability of this information. The Technical Manual is probably not much use to the beginner 2068 user, but an advanced user will find it an invaluable resource. You can order the manual by mail for \$25 which includes postage and handling from Timex Material Sales, P.O. Box 1378, Little Rock, Ar., 72203. Allow at least six weeks for delivery.

UPCOMING

TELECOMMUNICATIONS SPECIAL

- *Comparing the Data Base Services
- *The Smart II Software Reviewed
and
- *The Tasword II Software Reviewed
- *A Flight Instructor's Views on the
Timex Color Flight Simulator Cart-
ridge Software
- *More on the Spectrum Emulator
- *All of the regular features and
USER WRITTEN PROGRAMS
- *Plus much more!



THE RISE AND FALL OF THE TIMEX COMPUTER CORPORATION

PART I



WHAT HAPPENED ?

I don't know exactly what came to your mind when you heard the news, but as for myself, I experienced the five classic reactions to a death. First denial, then anger, and so on. It crept suddenly up on us all like a trap catches a mouse. We should have seen it coming. We should have only known. Quick phone calls to others only confirmed that I was joined by many others who were just as surprised.

Several large Timex retail vendors mysteriously vanished into thin air overnight and were never heard from again. The ball kept on rolling. By the end of the month only a handful of the previous vast majority of third party companies planned to stay on; the others only hoping to eliminate their large inventories. All of the major gloss magazines finally split for good. Watching the TS 2068 personal computer sell for under \$100 was also a little hard to swallow.

Perhaps the entire situation could have been foreseen by someone with sharp intuition and a feel for high flying finances in the electronics trade. Some of the details that finally came out of the disbanding of Timex Computer Corporation were quite possibly hinted at earlier, from time to time. But we were unaware of what was going on.

The story goes back to some years ago when Timex Corporation was manufacturing Sinclair computers to their specifications for the European market, in a Timex owned factory in Scotland. Out of this partnership, most certainly brought the ZX81 to the American retailers in the form of the TS 1000. Sinclair Research of England, founded by Clive Sinclair, was responsible for the engineering and design of the computer, and Timex made and distributed it. The

original ZX however, had been available in the United States for some months previously. It was sold by mail in a kit package.

The TS 1000 with its black and white video display, flat membrane keyboard and 2K RAM, was the first computer in the U.S. to sell for under \$100. It was to be found in almost every discount house and drugstore, or as one might say, wherever a Timex watch would be sold. Support and user groups were quickly formed and the modest little computer eventually became a hit. Within two years, over a million were sold.

Meanwhile, something was happening in the marketplace. Amidst a mirad of Apple, Atari and Commodore computers, Texas Instruments announced that they were dropping their personal computer line (i.e. the TI 994/A). It was 1983, and a wild orgy of price reductions throughout the home computer industry was responsible. Originally sold for \$750, the TI 994/A was finally discounted and cleared for a mere \$50. Many analysts had predicted that there would be a personal computer in every home by 1984. As the time approached, it was evident that this speculation would not come true, at least for the time being.

Several other companies saw heavy price reductions and as a result there were large profit losses. Not only were there price changes, but also a shift in consumer interest. It appeared that the more affordable or beginner models were losing ground to the more sophisticated and feature-packed computers. The once popular video cartridge game machines were slowly fading away, while games were still thriving and being played on home computers that provided high resolution graphics

and up to 48K memory.

Since profit is the name of the game in any commercial venture, watching the TS 1000 sell for less than \$50 by Christmas of 1983, left some large questions to be answered. Where would it all end? One thing was certain. The little TS 1000 had begun to lose its popularity and was on its way out. There were, however, those who would refuse to support anything but their Timex computer, and would not agree to the criticism that it was simply a toy.

Timex Computer Corporation had made some what of a success with the TS 1000, but had been hinting for some time about a new line of computers with more advanced features. Other companies were busy upgrading their lines and developing some sophisticated models. Even Sinclair Research back in England had released a color computer called the Spectrum, which was available with increased RAM capacity. Just as the TS 1000 was an offspring of the ZX 81, the Timex 2068 was based on the Sinclair Spectrum.

Originally entitled the 2000 series, and was planned as two separate models (the 2048 and 2072), Timex released only a single model, the 2068. It was produced and distributed several months before the original projected date, in order for Timex to relieve some of the pressure they were receiving from dealers and consumers who demanded something new. Production of the TS 1000 finally ceased for good, and all attention was given to the 2068. It was a physically larger model with high resolution color graphics, sound capabilities, 48K RAM, and a real keyboard.

For unknown reasons, another computer model was also briefly marketed. The TS 1500, which was to some degree, an updated TS 1000. It had onboard 16K RAM, and a push-button keyboard for the retail price of \$80. One can only conclude that

the TS 1500 was produced as either a beginners model or to fill the gap for users who still utilized the black and white software.

So with the new TS 2068 and all of the planned add-ons and extras, it appeared that Timex Corp. was back on the right track again. From time to time, there would be some criticism as to the manner in which a Timex customer would sometimes be left out in the cold after the purchase. It was said that Timex was simply out to sell computers in the same manner as their watches, and to make a quick profit. If a customer needed some further help or assistance, there was little that could be obtained. There was the toll-free telephone number, but getting adequate information from it was quite difficult, if not impossible. The so called third-party vendors of after-market Timex products also spoke of the frustrating "closed-door" policy they received from Timex. However, with the release of the TS 2068, it appeared that this situation was slowly improving and mending.

It was management that had been blamed for the heavy emphasis on marketing rather than customer follow up and support. This was for the most part speculation, but when word came that Dan Ross, director of the computer division at Timex, had been relieved of his duties, it was evident that there was a sincere effort in progress to clean the slate.

Then on February 22, 1984, Timex Computer Corp. announced that it was calling it quits. C.M. Jacobi, vice-president of marketing and sales gave the official statement. "We believe instability in the (home computer) market will cause the value of inventories to decline, making it difficult to make a reasonable profit. Further, we are concerned that those conditions will strain trade relations between manufacturers and retailers, a

relationship which Timex values very highly. These factors, coupled with strong demand in our other product lines, have indicated that Timex can now better utilize it's resources in those areas." Jacobi also stated that, "consequently Timex has decided to withdraw from the retail portion of the home computer business. Consumer warranties will be honored and out-of-warranty service will continue. The company will continue as a manufacturer and parts supplier to several large companies in the computer industry." Another spokesperson for Timex added, "while we believe that our 1500 and 2068 computer systems represent fine value for both the consumer and the retailer, our overall analysis of the business led us to the conclusion that 1984 would be another year of turmoil in the market-place..... making it difficult to make a reasonable profit."

Some of the more out-spoken Timex user groups were outraged over the decision, primarily because it was based on the assumption that there would be little profit made in 1984. Timex has perhaps always been a conservative company, and taking any sort of risk was always out of the question. Selling cheap but reliable watches for thirty years certainly doesn't take a lot of nerve, when considering a wristwatch is a popular and necessary commodity. When the home computer market appeared to be a blossoming business venture a few years ago, Timex jumped at the chance, but when the water became a little rough, they abandoned the ship. Most likely the decision to withdraw was a mistake, and somewhat premature. The records have now shown that 1984 became a stabilizing year for the computer industry. Instead of price cuts, there were a few price raises on some models.

Consider that nearly 500,000 TS 2068 computers were sold before

the announcement was made. Also, take into consideration the exciting peripherals that were to be released like the micro-drive, and think of the 400 third-party companies that were thriving. Add the 200 or more Timex user groups in North America, and the numerous magazines devoted primarily to TS computers. If you were to add all of the positive prospects of the business, they certainly would outweigh the dismal forecasts of the analysts. It all leads to the fact that Timex Computer Corp. made a bad decision.

Sinclair Research is still moving full steam ahead with a new computer called the "Quantum Leap". It is somewhat ironic for Timex to quit, when the company that was instrumental in designing the very computers that they sold, are doing very well. They make up about 48% of the computer market in England. Sinclair decided not to take over marketing the Timex computers here in the U.S., but would continue to release their new products here instead.

It appeared that the marketing rights for the TS computer line were up for negotiation. As of this writing, no significant deal has been struck. As much time has passed since Timex made the announcement, the possibility of such a deal is not very likely to happen. Rumors will continue to abound. There was even one story circulating, that a small corporation was buying the TS computer rights, and were going to market them all over the U.S. in small franchise-type computer stores, complete with thousands of software titles and lots of add-ons. We won't hold our breath.

One interesting and final note about the fall of Timex Computer Corp. is that to my knowledge, not one person has given up using their TS computer, or placed it on some

(continued on page 11)



THE RISE AND FALL OF THE TIMEX COMPUTER CORPORATION PART 2



ON THE DRAWING BOARD

Throughout the month of January and even into the early part of February, before the bad news had hit, the product planning department at Timex was bustling. Led by director Billy Skyrme, a long time company employee, this division was creating a bit of excitement among TS user groups and in the computer press. Speculation and rumor ran high as to what hardware would soon accompany the newly released 2068 personal color computer. Timex Corporation was vague and secretive as usual over much of the situation, although a few sneak previews and demos were set up with some equipment prototypes for a select few. Several of the larger TS vendors even featured catalogs complete with prices and projected release dates of the much anticipated peripherals.

After the crash had occurred, the dust had cleared, and Timex Computer Corp. had nailed their doors shut for good, one could only look back to what was being developed on the engineers drawing board, because what we actually had in our hands, was very little.

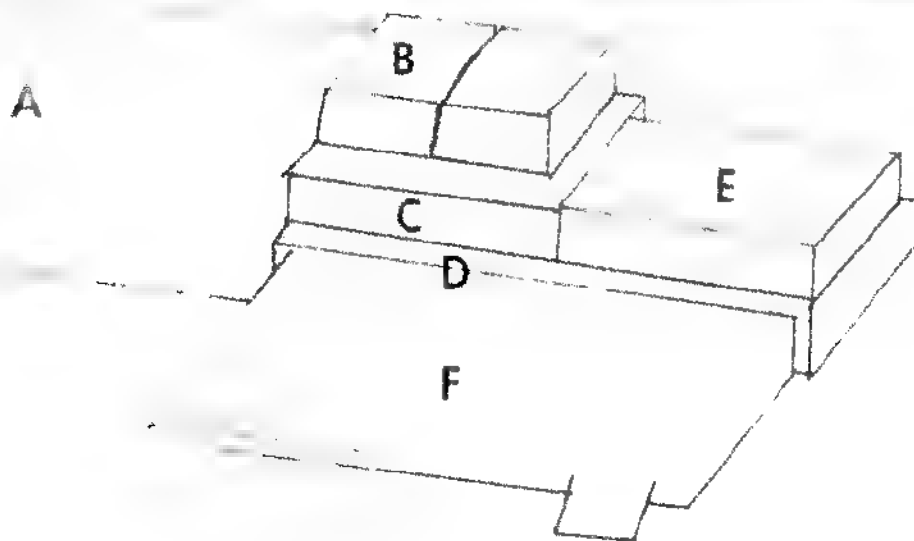
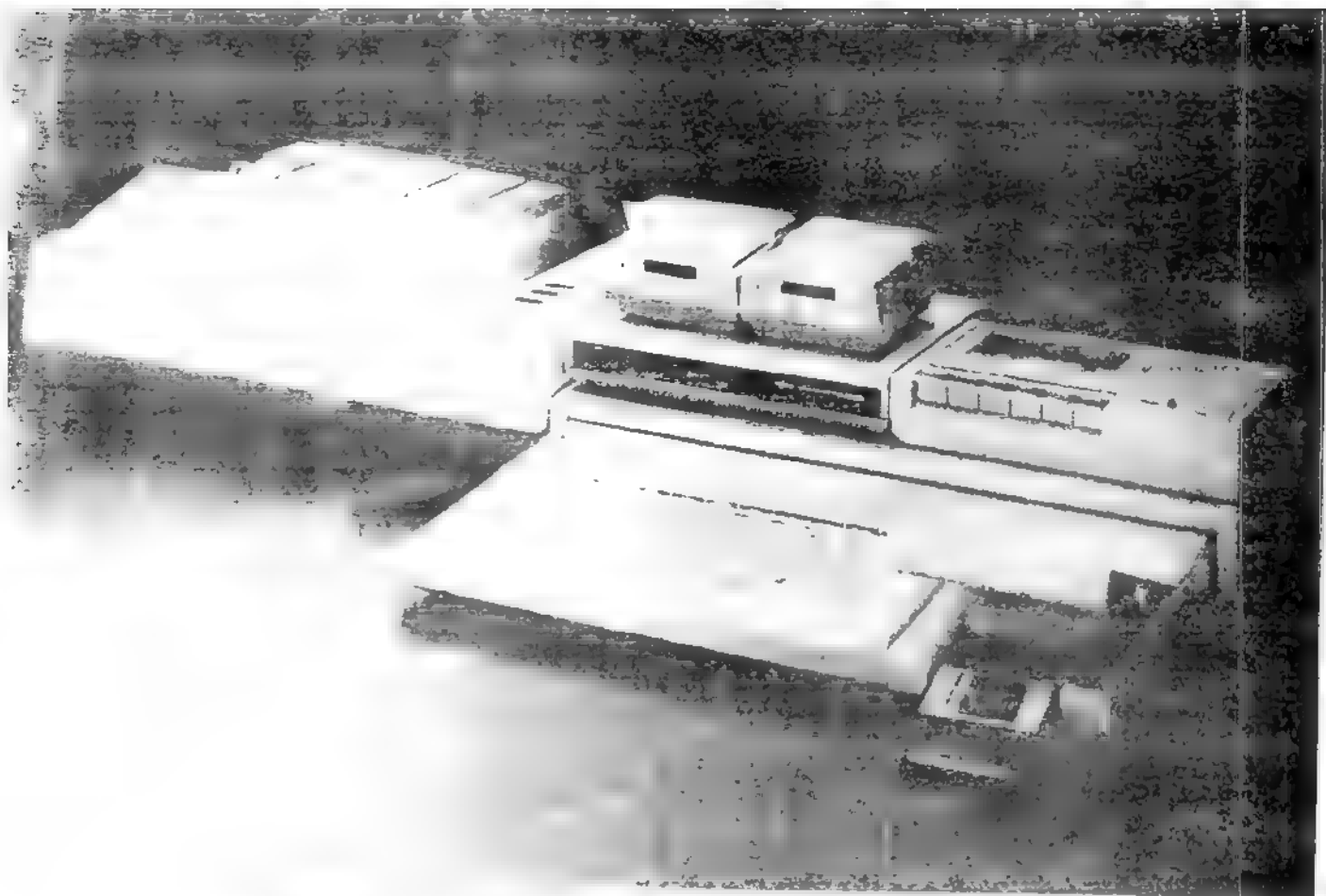
Almost simultaneously with the release of the 2068 came an accompanying data cassette recorder, the 2020, and a "command" joystick, the 2090. The 2020 is a very compact cassette recorder/player unit and is styled in the same silver color as the 2068, and looks suspiciously like a certain Radio Shack model. It's record of reliability is quite good. It loads and saves programs on all of the TS computers without missing a lick, including on the finicky 1000. The 2090 Command Stick was manufactured by the producers of the Zircon joystick. Outside of slight modification to the control handle and the vinyl TS sticker, it is primarily the same controller. The 2090 is a hand-held type joystick

as opposed to a table top model, and operates quite smoothly, although the operators hands may tire with prolonged useage.

Soon Timex was running a modest advertising campaign, extolling the benefits of telecommunication and heralding the long awaited arrival of their 2050 Modem. The modem was designed by Timex and manufactured by Westridge Communications, a division of Anchor Automation in California. Not until recently, did the modem ever see the light of day, and it never did with the Timex name stamped on the front. Orders were taken, but the initial 8,000 units never budged from their Connecticut warehouse. When Timex folded, every unit was shipped back to the manufacturer. The TS 2050 Modem was built into a small silver plastic case with a black plastic front panel. Timex intended to include a software package on a quick-load cartridge. It was to be called the "Smart Terminal One", and featured auto-dial, and auto-answer. Other software was in the works also. The 2050 was a direct connect modem (as opposed to an acoustic design) and worked at a baud rate of 300.

The old TS 2040 32 column thermal printer with it's 4.33 inch wide paper, took over printing duties upon introduction of the 2068. Not only did it work well with the 1000 and 1500, but was totally compatible with the new computer also. The 2040 was introduced in the U.S. some time ago, instead of the English ZX printer for a variety of reasons including the high radio-frequency interference that the ZX was alluded to emit. The Timex printer was made by Alphacom, a California electronics firm.

The creators of the 2068 quickly recognized the eventual needs of it's users, and decided to bring out a full size 80 column dot matrix print-



A-TS 2080 80 Column Printer
 B-TS 2065 Micro-Drive Storage Unit
 C-TS 2050 Telecommunications Modem
 D-TS 2060 System Expansion Unit
 E-TS 2020 Cassette Program Recorder
 F-TS 2068 Personal Color Computer

er. What with the advanced capabilities of the new computer, and the planned word processing software, the enlarged printer was a must. However, not one TS 2080 printer (appropriately named) came off the assembly line. A deal was struck with a Japanese company to produce the printer and some hand-assembled prototypes were shown, but the final go-ahead for full production never came. The TS 2080 was to be a letter quality printer with 100 cps, and featuring both tractor feed and single sheet roller. It also required a Centronics parallel interface which would have been available in the proposed TS 2060 System Expansion Unit. The expansion unit would have been simultaneously released with the 2080 printer. The Timex printer would have been a low cost alternative for a variety of other computer systems as well as the 2068. It would have more than adequately handled text and graphic duties.

Perhaps one of the most significant and anticipated peripheral that Timex had plans for was the TS 2065 Micro-drive mass storage unit. Using Sinclair Research's wafer tape technology, the micro-drive would have been a vast improvement over standard cassette storage. It would have stored up to 100k and an average load time of four to ten seconds! Along with their small compact size and a projected retail price of \$100, the micro-drive certainly would have been a hot item. Up to eight individual micro-drives could be chained together. The 2065 Micro-drives also required the TS 2060 System Expansion Unit, which contained the controller card. The expansion unit also would have included a CP/M card, a RGB monitor output, and the Centronics interface. One can only imagine such a system combined with a 2068 computer, several micro-drives, and the expansion unit!

Further plans on the drawing board included CP/M cartridge software, and the immensely popular LOGO software on cartridge, specially de-

signed by Digital Research. Some other languages on the cartridge format were considered as well, such as Forth and Pascal.

An inexpensive, but fairly high quality color monitor was also in the works. It would have been an imported model, with some features designed specifically by Timex.

The word processing software, touted so highly in the 2068 literature, never came to light. It would have been on a cartridge, and would have operated in conjunction with the 80 column printer. The program itself was based on a processor written for the Sinclair Spectrum, and translated for the TS 2068.

Finally, some thought was given towards the production of a disk drive device using a special floppy disk measuring under four inches in diameter. Such mini-disk designs are expected to be used more widely in the future, and are already being manufactured by several other computer firms.

Regardless of the multitude of ideas and engineering designs that never came about at Timex, we still ended up receiving perhaps the most important part of the deal...the cornerstone or brain of the whole system, the 2068 personal color computer.

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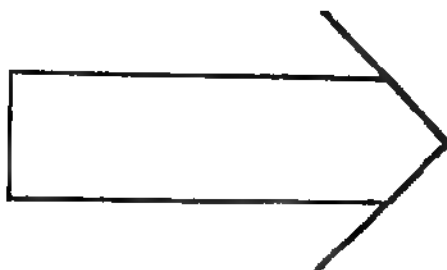
dusty closet shelf. Let this be a ghostly reminder to those corporate decision makers who pulled the plug. The hard-core TS 1000 users still very fondly type in their machine codes and modify or "hot-rod" them. TS 1500 owners proudly continue to program their little computers. TS 2068 owners are still very much enthused about their sophisticated machines, knowing that they have one of the best that money can buy. Though the company has died, their computers live on. No one has stopped because of the Timex decision. There may even be a stronger banding together of the users now that the storm has passed.

②

THE TS 2068

SOFTWARE DIRECTORY

This is your TS 2068 Software Directory for the rest of 1984. It features many interesting titles from an assortment of dedicated companies. Titles range in subject from educational to business, and even entertainment. The Software Directory was made as complete as possible at the time of printing to our knowledge. However, on page 15 are a few more companies listed that offer several new titles. These companies have just recently announced their new products, and this information was not available to us at the time of printing. Before any purchase is considered, the appropriate company should be contacted to obtain information on shipping and postage, and the most current price. Great care was made to supply the correct address and current price, but pricing has been known to change. Software prices are in parenthesis. It should be pointed out that the world of TS computers is constantly changing. Software availability for the TS 2068 is looking up. A substantial amount may soon be arriving from England. We will in the future offer an updated Directory. As for now, do investigate what is being offered. The software companies listed will be more than happy to accomodate you.



Gesso Software
c/o Bob Orrfelt
3436 Bay Road
Redwood City, CA.
94063

1. WP32 32 col word processor (24.88)
2. WP64 64 col word processor (29.88)

Heath Computer Services
950 East-52 South
Green town, IN.
46936

1. Sales File up to 600 entries (14.95)
2. Checking 2068 100 deposits/up to 350 checks (9.95)
3. Inventory 2068 up to 600 entries (9.95)
4. Financial Record Keeper Plus 2068 home finance package (19.95)
5. Invoice Control 2068 up to 100 invoices (14.95)
6. Cash Register turns computer into a cash register (9.95)
7. Mailing List 2068 up to 300 addresses (9.95)
8. Appointment Calendar save all appointment on tape (9.95)
9. Multiplication Tables educational (9.95)
10. Math Quiz ed :ational (9.95)
11. Flash Spelling educational (9.95)

Quicksilva, Inc.
426 West Nakoma
San Antonio, Texas
78216

1. Bugaboo arcade-type game (24.95)
2. Time gate arcade-type space game (24.95)
3. Cybird Assault arcade-type game (19.95)
4. The Chess player chess game with voice (24.95)
5. Smuggler's Cove adventure game with graphics (24.95)

6. Xadom 3-D maze game (24.95)
7. 3-D Strategy 3-D tic-tac-toe (24.95)
8. Mined-Out arcade-type game (19.95)

Ramex
48945 Vandyke Road
Utica, MI.
48087

1. Tasmath educational (19.95)
2. Save Mr. Bill educational like hangman (9.95)
3. Kool-Aid educational (9.95)
4. Fraction Fun educational (9.95)
5. Polynomials educational (9.95)
6. Fraction Zap educational (9.95)
7. Word Arcade educational (9.95)
8. Biorythms (9.95)
9. Personality Profile (9.95)
10. Mr. Clock educational (9.95)
11. Achievement Profile educational/math testing (19.95)
12. Compass compiler-assembler (24.95)
13. Digital Circuit Designer electrical engineering (24.95)
14. A.C. Network Analyser electrical engineering (24.95)
15. Up-Load 2000 converts ZX81 into 2068 language (28.95)
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P.O. Box 64
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other suppliers

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Fulton, N.Y.
13069

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P.O. Box 7668
Little Rock, AR
72217

②

A PORTABLE TS COMPUTER?

Portable computer models have been around for some time now. They are quite popular in the business field and especially where travel is a definite factor. Features range from built in disk drives, video monitor displays, telecommunications, small thermal printers, and some models even boast built-in software packages. They usually fold up into a fairly lightweight carry around unit with a handle. The TRS-80 Model 100 from Radio Shack is perhaps the most popular portable on the market today. Portables range in price from about \$600 to well over \$2,000.

TS computer owners have always considered their exceptionally small micros to be portable, to some degree. While perhaps lacking in slick packaging, the power and flexibility is all there. The special mathematic functions would be especially useful in business, engineering, and educational applications.

Often our computers and hardware are carted here and there in any handy container including cardboard boxes. We take them to our offices, to the classroom, to a friends home, and even to the computer club meeting. With AC adaptors for both computer and cassette recorder, and all the accompanying patchcords, we have on our hands a real "wire and gadget" nightmare.

There is a solution. It's not a new idea, but it is a good one. It involves packaging your computer set up into one standard size attache case.

You can find a good used attache case reasonably priced at a second hand store, as opposed to buying a new one for around \$100. A used one usually goes for \$10 to \$20. Or you could purchase a new cheaper hard

plastic model for around \$15. Next you will need to get a piece of foam rubber for the inside, to hold the contents in during transport. The foam should be as thick as the bottom section of the case. You can find all types of foam rubber at a hobby or craft store. Once you have decided what will be included in your portable set up, you can cut the appropriate holes in the foam, using your equipment as the pattern, so each item will ride snugly inside. Cut the holes with a sharp utility or carpet type knife.

A nice thing about rigging up a portable set up, is that it just might give a new use to that spare TS 1000 or ZX81 that has been laying around since you bought that new 2068. The TS 1500 is also a good choice, since the 16k RAM is built right inside. When using the 1000 or 1500 you will have to cut out some of the foam for the RAM pack. Of course you could house the 2068 in an attractive case also. There probably wouldn't be much room for any extras though.

An ideal set up would have to include a storage device. Most practical choice would be a cassette recorder, but there are also the very small stringy/floppy drive units which would load much faster. A disk drive would be too large. The smallest cassette recorder you have, would be the best. The TS 2020 Cassette Unit is an excellent choice, or any similar model.

There is also room in the case for storage of a generous supply of software. You could find a small, low profile cardboard box that the cassette tapes could fit securely in, then cut a hole in the foam rubber for the box.

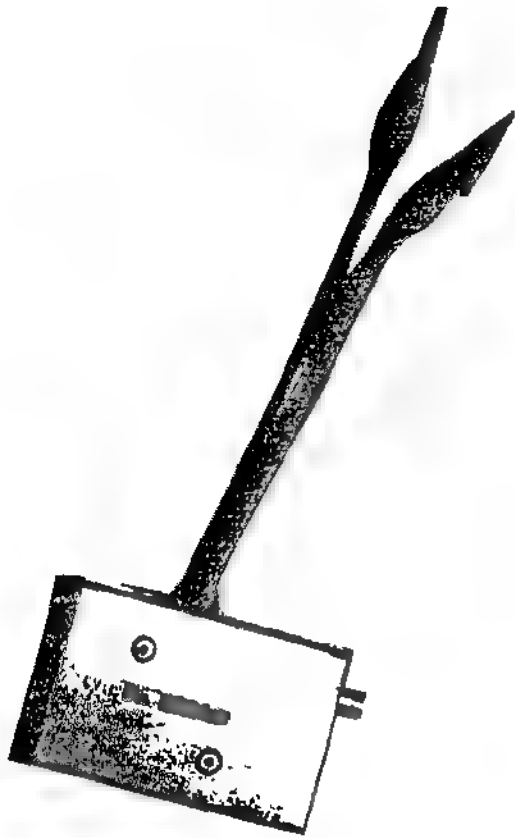
Some TS users even make room for their 2040 printer, or the smaller ZX printer. It is also conceivable that someone could include a modem device of sorts to include telecommunications as part of his portable

Some TS users even could make room for their 2040 printer, or the smaller ZX printer. It is also conceivable that someone could include a modem device in order to add telecommunications as a feature of the portable set up. Whatever meets the needs of the individual user could be included.

One device that may be overlooked is the AC power strip. This greatly simplifies hook up procedures. A smaller power strip with say four outlets would be the best choice. All of the power lines and connecting wires could then be run underneath the foam and out of sight, making a much neater appearing system. Only one electrical connection needs to be made when arriving at the work station, and that is the one from the power strip to the wall.

Most manufactured portable computers come complete with some sort of video terminal or LCD display, as we mentioned earlier. In our TS portable system, because of limits in size and practicality, we will not include a video monitor. Instead we will have to rely on what is available to us at the location where we are traveling to. Almost anywhere you can find a TV set. At school, in homes, even at the Motel. You could even arrange to store one of the inexpensive black and white models at the office.

To simplify TV hook up, you can make a little device from a standard TV/computer switch box. Simply cut the screw lug terminals off the end of the short piece of antenna wire that protrudes from one end of the switch box. Strip back some bare wire and crimp or solder on a small alligator clip in place of each screw lug. Now anytime you want to hook into a TV set, you simply clip the leads onto the VHF screw terminals and presto! Much faster than a screw-driver.



switch box with alligator clips
for rapid computer hook up to
a television monitor.

So now we have a genuine TS portable computer package, complete with it's own carrying case. It has a memory storage device, software, and optional printer or modem. Not only that, but it is ready to go to work in a matter of seconds. Some popular software packages to consider to bring along would be a data base like the ZX Pro/File, or a financial spreadsheet like Vu-Calc, and maybe a word processor. Don't forget some entertainment like the all time classic Mazogs (the best computer game ever). Enjoy your TS portable system, and remember, "have computer, will travel".

PROGRAMS



BLUES MASTER

10 PRINT INK 1 AT 5,8."BLUES M
ASTER" AT 20,0 "TO BEGIN PRESS
THE B KE AND THEN PRESS ENTE
R"

For The 2068

```
30 INPUT A$
40 IF A$="B" THEN CLS
50 IF A$="E" THEN GO TO 10
70 PLOT 50,130
80 DRAW 50,0
90 DRAW 20,-120
100 DRAW 12,-150
110 DRAW 5,-150
120 DRAW 50,0,.8*PI
130 DRAW 20,5
140 DRAW -20,0
150 DRAW -10,0 -.8*PI
160 DRAW -5,0
170 DRAW -13,50
180 DRAW -20,20
190 DRAW -13,0

300 BEEP .5,-1 BEEP .5,-2 BEE
310 PAUSE .5,1 -12
320 BEEP .5,3 BEEP .5,-2 BEEP
330 PAUSE .5,1 -1
340 BEEP .5,-5 BEEP 1,-12
350 PAUSE .5,5
360 BEEP .5,0 BEEP .2,7 BEEP
370 BEEP .2,7 BEEP .5,6 BEEP
380 BEEP .2,7 BEEP .5,17
390 BEEP .2,7 BEEP 1,0
400 PAUSE .5
410 BEEP .5,0 BEEP .5,3 BEEP
420 BEEP .5,3 BEEP .5,7 BEEP
430 BEEP .5,10 BEEP .5,10
440 BEEP .5,6 BEEP .5,5
450 BEEP .2,-5 BEEP 1,0
460 PAUSE .5
470 GO TO 100
```

A dash of that good ol rythmn and blues from the old Blues Master himself. Complete with musical graphics, this one could run indefinetly....that is if you could stand it.

3D TUNNEL

For The 2068

```
10 PRINT INK 2 AT 2,10 "3D TUN
NE"
20 FOR X=70 TO 1 STEP -2
30 CIRCLE X,X
40 NEXT X
50 CLS
60 GO TO 10
```

Reflections of the old TV series "Time Tunnel". See what effects you could create by changing INK colors.

LANGUAGES

NOTE: This is the first article in a series called "Computer Basics". It is a sincere effort to unravel the mysteries that a first time user may be facing in the world of personal computing. Along with a detailed discussion on BASIC, we will also touch on some other subjects that may be of interest. We start out this feature with a look at computer programming languages.

In many fields of learning and occupations, unique and customized languages have evolved, due to the need for efficiency and standardization. Take the medical field for instance. When a doctor writes out a prescription, to you it looks like no more than sloppy scribbling, but to the pharmacist, it is a clear order written in a special language. Once such a language is mastered, it becomes almost second nature in proper execution. Such is true in computer programming. There is a particular language, and once learned, it is off to some smooth sailing. Actually with computers, there are several different languages as we will soon see. You can learn many of them, or just one.

Learning a programming language could possibly open new doors for you and your computer. Let's face it, there is a lot more to using your computer than just running software. Programming allows you to communicate and execute important commands, simply exploring the unlimited possibilities available to you the user. But as in all languages, there are some rules to follow.

All Timex and Sinclair computers have a built in language called BASIC. It is a version based on the original, which was developed in the 60's. BASIC is short for "Beginner's All-Purpose Symbolic Code", and just as the name implies, it was intended to be used by beginners. Most of the commands in

the BASIC language correspond or sound similar to simple English words. For example: print, go to, then, and next. While simple programming is BASIC's big plus, the slow speed that it executes a command can become somewhat of a chore. Although theoretically, someone could begin to write some sophisticated programs in BASIC, in just a matter of a few weeks.

Machine language is the computers native language, and is what it understands the best. The commands are composed of combinations of 0's and 1's (binary digits). Since the computer does not have to make any sort of internal translation, as in BASIC and some of the other languages, Machine executes very fast. This language is usually reserved for the more advanced programmer, in that it is quite difficult to learn, and somewhat easy to make mistakes with. To write a program in Machine language, you need to understand memory locations, since bits of information are stored in different locations, and then manipulated by the computer. The process is often time consuming and quite tedious. The benefits in speed of execution and memory space economy, far outweigh the hard work of programming in Machine. There are many fine books out there on the subject of Machine language that a beginner could investigate.

There is another language that is somewhat similar to Machine, but is a bit more user friendly. It is called Assembly language. In Assembly, the 0's and 1's have been replaced with words and abbreviations. Therefore, commands and memory manipulation are somewhat simplified, without much sacrifice in speed of execution.

It might be interesting to mention at this point, that languages such as Machine and Assembly are what we call low level languages, since they communicate with the computer in it's own working language. BASIC and some of the other languages that are similar to it, are called high level, because of the extensive translation process that has to take place.

One particular high level language that has been made quite popular is Logo. It was designed at M.I.T. as an educational tool for children to become accustomed to simple computer commands. It is based on graphic capabilities that move a "turtle" cursor around the screen in a specified amount of spaces or degrees. A suitable Logo program has never been available for a TS computer, but there is one for the Sinclair Spectrum. Logo may become available for the TS 2068 in the near future. Part of the problem is due to the copyright and licensing. Interest in Logo is quite high, especially for educational purposes.

In closing, it should be pointed out that there are also some other fine languages that have some interesting features. They are Forth, Fortran, and Pascal. They are structured languages, modular, and follow definite rules and guidelines for programming. Some of these languages have been made available in a software format for TS computer owners.

NEXT ISSUE: "MEMORY AND THE MICRO-PROCESSOR"

①



PRO SHOP

How To Make Music with the TS 2068 part one

NOTE: The Pro Shop is a regular feature to provide advanced concepts to the seasoned TS computer programmer. As we continue on through the different issues of our magazine, we will touch on a variety of topics including comprehensive machine programming. We begin this issue with the first part of a two-part article on "Making Music With The TS 2068". The first part deals with making music with external equipment like synthesizers via an inexpensive digital-to-analog converter. The final part of the article will be contained in the next issue of Time Designs Magazine, and will cover the programmable sound chip and it's registers, and how to structure your music programs.

Digital computers like the TS 2068 deal with two voltages. These are 0v and +5v, or rather something is true (+5) or something is false (0). we could also call this switched on or off. A popular process today, is to control external equipment with analogous properties and multiple control voltages, with digital computers.

In music, controlling electronic instruments with computers is rapidly growing into a bold new frontier. Instruments like music synthesizers, some home organs, and the newer compact Casio-type portable keyboards, can be manipulated by digital computers to some degree. They can send information along data and address busses to define tone pitches, tonal colors, and envelope shaping. The possibilities are endless. Entire songs or note sequences can be stored in memory, and recalled instantly.

As we mentioned before, computer operate in only two voltages. We pose a problem here, because most modern electronic keyboard instruments like synthesizers are voltage controlled,

This means that say a one-volt control signal is sent to the synthesizer's tone oscillator. This would register a low C note. As the voltage is increased, the steps and half-pitch steps rise, while a control voltage of two volts would produce a C one octave above and so on. Other portions of electronic instruments are also voltage controlled like the tone shaping-filter's cut off frequency, the voltage controlled amplifier, and the envelope generators.

A solution to interfacing the digital computer to an analog music synthesizer, is a DAC (digital-to-analog converter). Most DAC's have two sides. On one side you feed in the binary numbers, and from the other side you can extract an analog voltage, which corresponds in some manner to the binary number. There is one DAC that you could build from a kit, and it won't deplete your cash flow either. For \$24.95 (plus \$2.00 for shipping) you could put together the 8785 Linear Digital-To-Analog Converter from PAIA Electronics (10 20 W. Wilshire Blvd., Oklahoma City, OK, 73116). The DAC kit comes with a PC board, all the necessary electronics, documentation on what to do with it after you build it, and a brief set of instructions. It is not a kit for the first time kit builder. You need to be pretty handy with a soldering iron before you start out. After the DAC has been constructed, you will need to obtain the necessary cables and connectors (not supplied) to interface the DAC to the rear edge of your 2068's PC board. Gladstone Electronics (90 Fuhmann Blvd., Buffalo, N.Y., 14203) carries a complete line of cables and connectors that are compatible.

There are eight possible data lines used in the 8785 to convey con-

trol voltage information. This essentially provides only the output for a monophonic synthesizer, or one that produces one tone at a time. To provide adequate voltage outputs for a polyphonic synthesizer, you may need to consider a TTL chip called a "one-of-16-decoder" which allows for connection of up to 16 separate 8785's. PAIA also markets a QuASH (quad addressable sample-and-hold) kit, which drives four separate monophonic lines from one DAC.

A complete understanding of the 2068 MPU and memory mapping is essential in developing adequate software needed to drive a computer controlled electronic music system. To send data to the DAC requires storing a byte to that address. More musically satisfying results require more sophisticated programs. You could simply POKE the values and numbers that correspond to voltages in BASIC, but in order to fully utilize the synthesizer's potential, it calls for machine code routines.

If you would like to further explore this area of interfacing a digital computer to electronic music instruments, there are two books that are quite interesting and informative on the subject.

1. "Controlling Exponential Systems"

by John Simonton

Polyphony

Box 20305

Oklahoma City, OK

73156

2. "Musical Applications of MPU's"

by Hal Chamberlin

Hayden Book Co.

Rochelle Park, New Jersey

In conclusion, you would almost have to hear a system of a computer driven synthesizer to appreciate the flexibility that the user has in producing songs and special sound effects

④

Here is a simple routine for the kids. It could be modified in a variety of ways, such as giving the correct answer after three unsuccessful attempts. Come on, help little Johnny out with his grade school homework.

[illegible]

Want a print out of all the character strings that your computer stores in ROM? You never know when this one might come in handy, right? Try it out on the 1000 and the 2068.

```

10 PRINT "HERE ARE ALL THE CTS"
20 FOR X=0 TO 255
30 PRINT X,CHR$(X)
40 NEXT X

```

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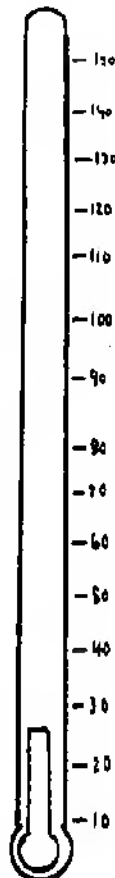
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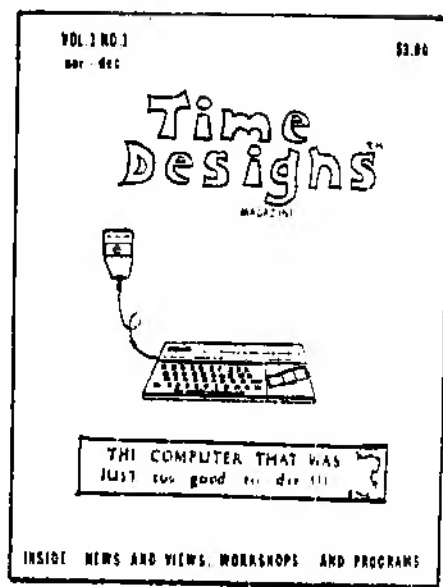
We will pay \$20 for any program listing that we decide to publish in our magazine. We need original computer programs for both the TS 1000/ZX81 and the 2068. Programs can be of any subject matter or type, including business, educational, entertainment and utility. Program listings should be sent to us either printed by the TS 2040 or some other similar computer printer. Cassette tapes are also acceptable and preferred. We will not normally return the unused programs unless specifically requested by the author, and includes a correct return address. The editor of Time Designs Magazine will decide which programs will be accepted and published. We only will use programs that are original and are not copies or translations of copyrighted material. We will contact the authors of chosen programs by mail. Send eligible programs to: T.D.M., 29722 Hult Rd., Colton, Or., 97017

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